

DOCKETED

Docket Number:	15-MISC-04
Project Title:	Fuels and Transportation Merit Review
TN #:	206813
Document Title:	SCAQMD Catenary Truck Project Presentation
Description:	Presentation for CEC Merit Review Dec. 2, 2015
Filer:	Tami Haas
Organization:	South Coast AQMD/Joseph Impullitti
Submitter Role:	Public
Submission Date:	12/1/2015 3:36:17 PM
Docketed Date:	12/1/2015

SCAQMD Catenary Truck Project

CEC Merit Review
December 2, 2015

Joseph Impullitti Program Supervisor SCAQMD



Project Goals & Objectives

- Promote the implementation of zero emission goods movement technology
- Demonstrate a viable technology for future regional zero emission corridor
- Prove out:
 - Catenary system and truck interface using various system architectures operating on the catenary
 - Vehicle regenerative braking and battery charging through the catenary
 - Vehicle and system electrical loads

Project Goals & Objectives



- Determine costs
 - Catenary system construction costs/mile
 - Operating costs
 - Integration of pantograph per truck costs
 - Electric fuel - kWh/mile costs
- Determine system owner and operator
 - Establish business case
 - Identify business drivers and financial metrics
 - Analysis of costs, benefits and risks

Siemens Demonstration Project

- Designed to prove catenary truck concept in real-world drayage operations
- Catenary system
 - One mile length, both directions
 - Pole spacing similar to street lights (possibility of dual-use poles, but not existing poles)
 - DC power substation with remote monitoring
 - Test track for software & hardware adjustments
- Four demonstration trucks



Catenary Truck Platforms

1. Volvo Diesel Hybrid
 - Major OEM partnering through existing DOE diesel hybrid development project
 - All-electric range capability (off catenary)
2. TransPower CNG Hybrid
 - Major OEM chassis - local integrators' technology
3. TransPower Battery-electric
 - Leveraging local integrator's current technology development
4. BAE Kenworth CNG Hybrid
 - Leveraging DOE project with catenary accessible hybrid

Project Status: Catenary Trucks

- The TransPower CNG Hybrid and Battery Electric truck have completed final assembly
- The vehicles were tested on the off-the-road test track in Carson along Alameda Street



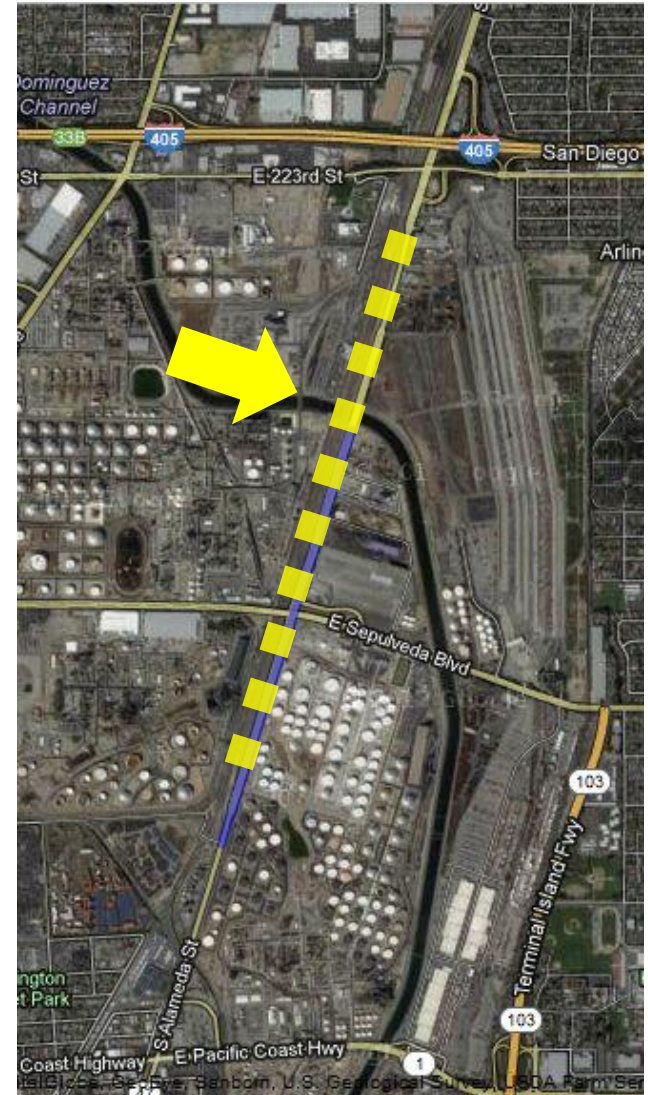
Project Status: Catenary Trucks

- The Volvo Diesel Hybrid truck is in Sweden – under development for hybrid system and Siemens pantograph
- The vehicle will be ready for demonstration in June 2016



Demonstration Location

- Approximately one mile along Alameda Street in the city of Carson
- Current route for north-bound trucks to warehouses and 405



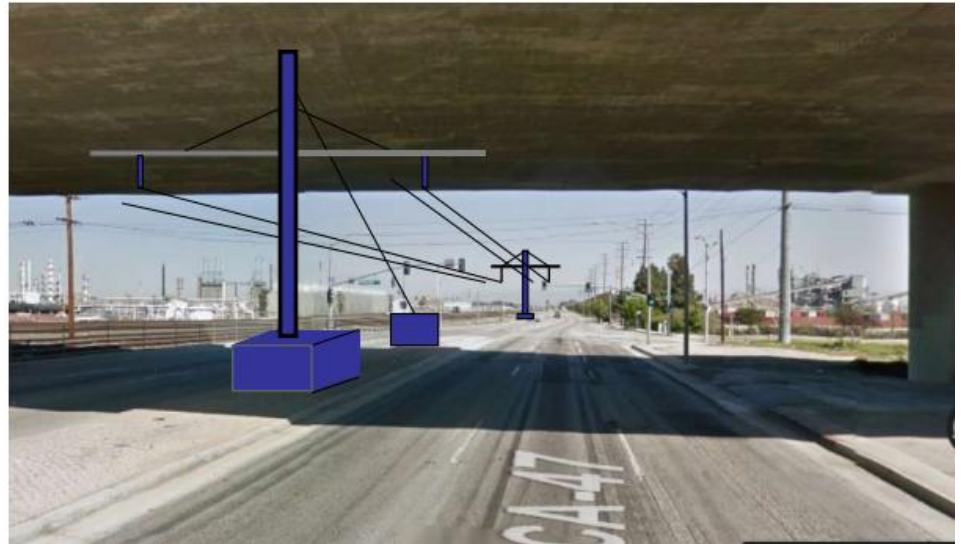
Project Status: Infrastructure

- Potholing along Alameda St. median uncovered an unidentified pipeline
- Original design for underground foundations for the poles needed to be changed



Pole Footing Redesign

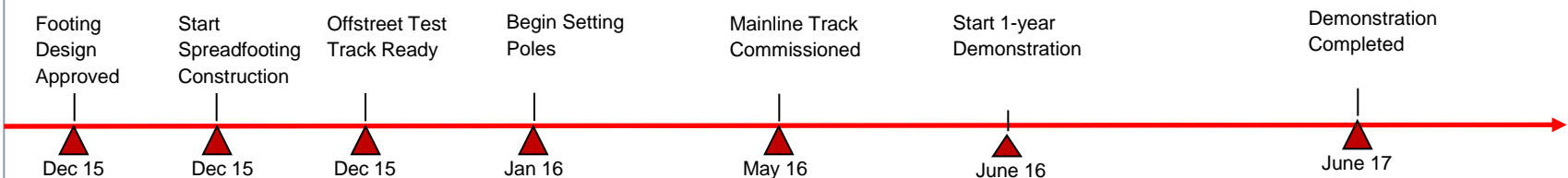
- Unidentified pipeline and soil conditions prevent installing planned below ground foundation
- Design and install a new foundation type that will sit entirely above ground
- Precast concrete footing was the best solution based on impact to cost and schedule



Schedule Impacts

- Assumes that utility and City of Carson approval of spread footing design received by December 1, 2015
- Does not take into consideration any other requirements that may be imposed by utilities or City of Carson

Schedule



Project Status: Off-the-road Test Track

- Test track is paved
- OCS foundations completed
- Power Supply is connected to SCE grid
- Commissioning of the power supply and test track has been completed
- Demonstration of the truck and test track in December

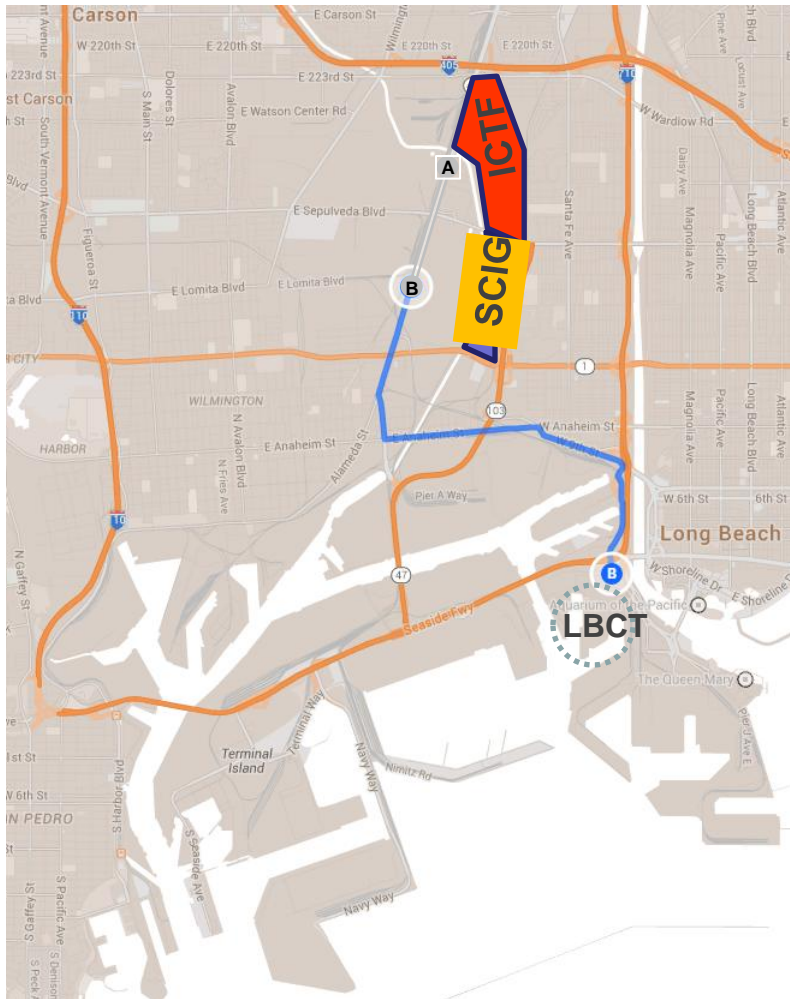


OCS Phase II Study

- State agencies have requested cost estimates from Siemens for Phase II
- Siemens task in Phase I - to determine costs/mile
- An independent infrastructure cost analysis is being conducted
- An investigation of possible sites for Phase II has started



Phase II - Possible Sites



Continue existing one mile to connect the ports to rail Terminals...

Or

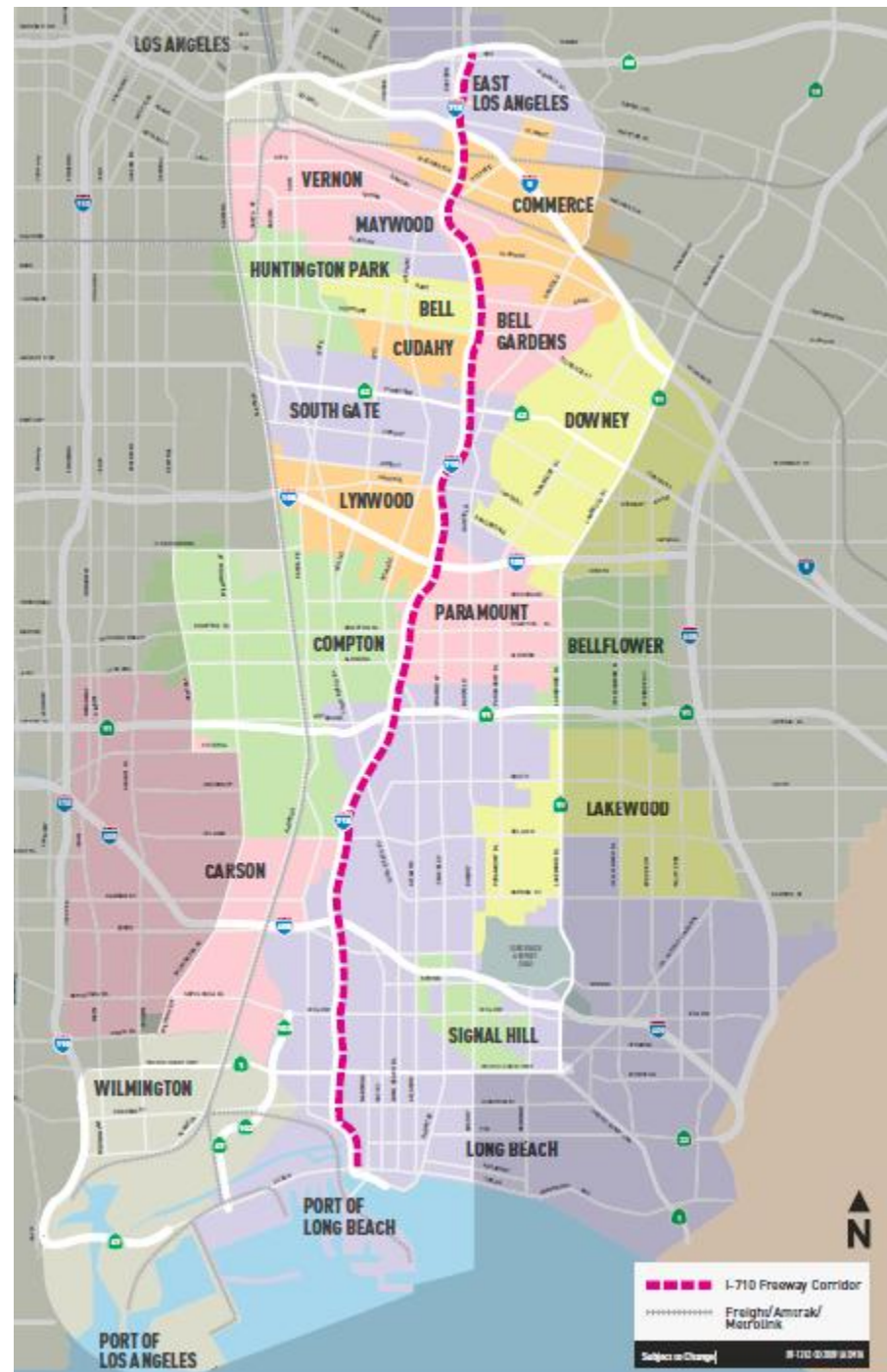
Find new location around the ports and Inland Empire

Or

- Existing 1-mile OCS demonstration segment
- Proposed extension to OCS

I-710 Corridor

- Fall 2016
 - Complete preliminary design and traffic forecasts
 - Complete eng. & env. studies of alternatives
- Late 2016: Recirculate Draft EIR/Supplemental Draft EIS
- Mid 2017: Identify preferred alternative



Catenary Project Merit Assessment

A white truck is shown from a high-angle perspective, positioned on a road. The truck's roof is equipped with a complex catenary system, consisting of various cables and structural supports. The truck is oriented towards the bottom right of the frame. The background is a light gray, suggesting a road surface or a studio setting.

- Potential for emission reductions
 - Zero emission operation in highly impacted areas
 - Near Zero emission operation off catenary
- Pathway to commercialization
 - Global partners Siemens and Volvo
- Formula needed for success
 - Cost reductions on infrastructure and trucks
 - Identify business case and system operator

Catenary Project Merit Assessment



- Lessons learned
 - Construction limitation transformed into dual strategy: above/below ground foundations
- Future success
 - Leverage former and ongoing project vehicles
 - Engage national and global manufactures
- Public policy goals
 - Significant emission reductions in highly impacted environmental justice communities



QUESTIONS - DISCUSSION